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Ontario Planning and Development,
Dept. of

Department of Planning and Development

HON. DANA PORTER, Minister

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The Thames Valley Report 1946




INTRODUCTION, SUMMARY
and RECOMMENDATIONS

TORONTO

and Published by T. E. Bowman, Printer to the King's Most Excellent Majesty

1947



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THAMES VALLEY REPORT, 1946

(ABOVE THE CITY OF LONDON)

INTRODUCTION

In undertaking a survey to cover an area the size of the Thames Watershed above the city of London, comprising approximately 1,200 square miles, it was realized that certain conservation problems could be covered only in a general way and the more necessary local ones emphasized. Accordingly then, in the report, certain subjects have been treated for the whole area, while others have been confined to a smaller area, especially where the type of survey required was of an intensive nature.

The report is therefore divided into two parts, the first part covers such items as physiography and geology, climate, ground water, settlement, agriculture, forestry, the river, wildlife and recreation. The second part covers those subjects where more intensive study was required. For example, a land-use study which sets out to examine the soil types, the amounts of erosion, slope, etc., on farmland, requires a great deal of time and a large staff to cover many square miles. For this, two small watersheds, namely, the Trout Creek and the North Branch Creek, which adjoin each other, were selected and in this area every acre of every farm was examined, classified and mapped. It was felt that while it was impossible, with the staff available, to cover the whole Thames area under consideration, these two watersheds comprising in all ninety-four square miles would be representative of the types of improvement which should be done in most parts of the whole watershed; certainly those areas which are comparable from the standpoint of topography and soil.

The same method was followed in forestry, and the same watersheds used. Every woodlot and every potential reforestation area and each headwater source area was examined on the ground, studied, classified, and mapped. By the same token it was considered that the forestry problems of these two representative watersheds would give a fair idea of the conditions of woodlots and plantable land throughout the whole Thames Valley and that any recommendations which would apply to these could be applied to the whole area.

The investigations which were carried out in connection with flood control naturally confine themselves to those areas which are suitable for this purpose. While dam sites were selected at all suitable locations, the intensity of the work required on such sites naturally places them in the category of special studies.

The study of wildlife does not confine itself to a small area, in fact, considering the movements of land animals, birds, and game, the whole watershed is comparatively small for a broad picture. On the other hand, the suitability of certain streams for fish can be studied in a smaller area and where conditions elsewhere on the watershed are the same, recommendations for these streams can be applied to others. Consequently, a special study in fish habitat was conducted on the streams and adjacent river included in the two watersheds already mentioned.

SUMMARY OF CHAPTERS

PART ONE—THE WHOLE AREA

1. **LOCATION AND BOUNDARIES:** The part of the Thames Watershed under consideration includes the drainage area of the Thames River and all its branches above the City of London, approximately 1,200 square miles in area (see accompanying map).
2. **PHYSIOGRAPHY:** The Geological history of the Watershed as well as the physiographic areas are described and three maps delineate these features.
3. **CLIMATE:** The peninsular part of Southern Ontario is an upland which rises over 1,000 feet above the Great Lakes. The upper Thames drains part of the south-western slope of this upland and its climate is affected by this position; particularly the rain fall and snow fall which are above the average for Southern Ontario. The yearly precipitation averages 38 inches at London and Stratford which is approximately 5 inches above the average for Southern Ontario. At least half of this is extra snow. Woodstock with 33 inches in all and 58 inches of snow is near the average for Southern Ontario. The rain fall of the summer six months is 19 inches in Stratford, 18 inches in London and 17.5 inches in Woodstock. London and Stratford are in line with the heavy snow belt that extends across the westerly slope, south of Georgian Bay. In short the upper Thames Basin is in one of the wetter parts of the Province comparable to the most easterly counties in the St. Lawrence and Ottawa lowland.
4. **UNDERGROUND WATER:** No consideration of river valley development or conservation or of redevelopment of agricultural areas could be adequate or in any way complete, without some mention of that water which occurs beneath the surface of the earth, and particularly of that part of the subsurface water that is within the zone of saturation, the ground water. For it is this water that is primarily responsible for the continued flow of surface streams and it supplies to a very great extent our domestic and industrial needs. The chapter elaborates this statement with regard to ground water in general, makes specific reference to the problems of Oxford, Middlesex and Perth Counties, and describes a special study of farm water supplies on the watersheds of the Trout Creek and North Branch Creek. Of the 357 wells examined on these watersheds, 86 were reported as sometimes dry.
5. **SETTLEMENT:** Land settlement in the Thames followed the same pattern as in other sections of Southern Ontario. The area to a great extent remained an untouched wilderness until about 1825. The earliest record of settlement is 1794 and by this time surveys of the southerly townships had begun. From this time on, settlement proceeded more or less rapidly as the area was opened up. The peak of rural population was reached about 1871. After this period all the townships show a gradual decline except those close to urban centres. The larger centres on the other hand showed a steady increase which was made to some extent at the expense of the smaller places. Almost all the townships on the watershed today have a smaller population than in 1871.

6. **AGRICULTURE:** The history of agriculture in the Thames Watershed followed an evolution common to all the areas in Southern Ontario that were originally covered with hardwood forest. This included first, the cutting of the forest and the clearing of land for the growing of crops, second, grain farming, and third, mixed farming with specialized forms such as fruit growing, seed growing, stock breeding, dairying, etc., as local conditions warranted.
7. **THE FOREST:** From the description by early travellers and other records, as well as from the remnants which remain the virgin forest of this area was predominately hardwood. Hard Maple and Beech associated with southern hardwood species occupied the best soil. Soft Maple and Elm occupied similar but poorly drained soils on the higher land particularly on the height of land between watersheds. Oak in open park-like groupings, held possession of the sand plains while scattered White Pine towered above the hardwood forests and grew in stands on well-drained loam soils. White Cedar and mixed woods of White Cedar, Hemlock, White Pine, Soft Maple and Yellow Birch grew on the muck areas. As settlement advanced the reduction of the forest was very rapid for although settlement did not begin until the early part of the nineteenth century and the woods were almost unbroken along the Governor's Road for miles west of Ingersoll as late as 1837, by 1860 the forests of Middlesex and Oxford Counties were depleted by more than 60%, by 1910 by more than 90%, and by 1940 the Census of Canada showed the following woodland figures for the counties embodying the Thames Watershed above London. Middlesex 7.8%, Oxford 6.7%, and Perth 6.1%. Forest products from the area in early days included potash, masts, spars, some squared timber, tanbark, lathwood, staves and fence rails. These were followed by modern products such as firewood, fence posts, railway ties, poles, pulpwood and logs. In 1850 in the three counties there were 133 sawmills with a total output of 51,514,000 board feet. In 1944 there were 14 sawmills with a total output of 2,161,214 board feet. The peak of Maple Sugar Products was reached in 1860 when 1,224,286 pounds were produced. In 1930 the amount had dropped to 37,595.
8. **REFORESTATION AND WATER STORAGE:** Twenty-two possible reforestation and water storage areas are indicated, comprising 25,915 acres. Each is described as to condition and possible treatment.
9. **CONSERVATION MEASURES IN PROGRESS:** Conservation measures in progress in the area include county forests with 555 acres for the three counties, three municipal forests, totalling 58 acres, a number of demonstration woodlots, and 15 school plots. In addition 1,259,879 trees have been distributed to school children. Private planters in the three counties have planted 11,888,824 trees since 1905.
10. **THE RIVER:** The Thames River basin drains 2,225 square miles of densely populated and for the most part excellent farm land in Southern Ontario. It rises in the Highlands of Perth and Oxford Counties northeast of London and carries water for more than 180 miles to Lake St. Clair. Characteristics of the watershed suggest the division of the river into two sections, namely one above London and the other below.

The problem of summer flow is not so acute on the Thames as it is on some other rivers in Southern Ontario. Even during the period of low flow

in the late summer months, there is usually enough water in the main branches to prevent excessive pollution.

Encroachments on the flood plain of the river are serious, particularly in the urban centres such as the city of London where there is a temptation to crowd in on the river and fill up old natural flood channels.

11. **SANITATION:** The significance of sanitation in the Thames River must be related very closely to the use to which that water is put. If the water must be used for domestic purposes for supplying urban centres a higher standard is to be expected. If, on the other hand, it is to be employed only for agricultural purposes or for certain industrial uses then bacterial pollution is of less significance.

Sources of pollution of the river are discussed under these headings, namely: agricultural drainage, industrial wastes, and domestic sewage.

Water supply by municipalities is discussed and considerable space is given to the water supply of the city of London. The source of this supply, namely deep wells, is described. The possibilities of obtaining a supplementary supply of water from Lake Huron or Lake Erie, as well as from the lake formed by the Fanshawe dam, is explored.

12. **FLOODS:** Flooding on the Thames River has occurred regularly from the time of the earliest written records. In 1792 it is recorded in the Zeisberger diary that floods were occurring on the Thames River. From these early days up to modern times flooding has taken place more or less regularly. A careful study of the records of past floods on the Thames makes it clear that the river has always risen to great heights at intervals of a few years and flooded the low lands along its course. It is plain that the early settlers were well aware of this and were influenced by this knowledge in placing their homes.

There is good reason to suppose that the cutting of the forest tended to increase the dangerous character of the floods. Blockades of ice and debris also played an increasing part as time went on, especially at the period when lumbering activity was at its height. Mill dams and other artificial obstructions were usually responsible for the formation of these blockades on the upper part of the river, and the bursting of mill dams was the cause of much damage and sometimes the loss of life. The gradual encroachment of buildings and other structures on the natural flood plains of the river were also a serious menace to the rising waters and because of the loss of property and human life, floods became more prominent in the minds of the people, as settlement in the urban centres increased.

13. **WILDLIFE:** In discussing Wildlife on the Thames watershed two objectives must be kept in mind. The first is to retain for the average citizen the opportunity to see and enjoy the varied forms of birds, mammals and other wildlife indigenous to the region in the greatest possible variety. The second is to retain for the average citizen the opportunity to hunt and fish within the law in an attractive environment or to trap fur for profit. Any plan for wildlife interests in the watershed must keep these two objectives in mind and also guard against adverse effects on farming practices.

This chapter discusses birds and animals which were present on the watershed in early times, those which are present now, including a complete list of mammals and birds. It discusses the present status of game birds on

the area, game mammals, fur bearers, species of spectacular interest, species of significance to agriculture, and fish. It further discusses such topics as cover, game preserves, wildlife sanctuaries, food plantings, the improving of waters for fish, research and publicity.

14. RECREATION: Recreation is dealt with especially in relation to the use of the watershed outside of urban centres for short vacations and over-night stays as well as for youth organizations. There are splendid opportunities for the development of many such areas in the watershed. The major recreational area recommended by the report is the establishing of natural park in the Thames Valley just north of the proposed Fanshawe dam, including in all 3,000 acres.

PART TWO—SPECIAL STUDIES

SECTION 1—LAND USE

1. DESCRIPTION OF SPECIAL AREA: The area selected for these studies comprises approximately 94 square miles, about one tenth of the Thames Watershed above London. It consists of the watersheds of Trout Creek and North Branch Creek, about 64 and 34 square miles respectively. The topography is gently rolling to almost flat, except for the deep valleys of Trout Creek and its tributaries and the kame moraine area between Harrington West and Lakeside, which forms some of the roughest topography in the watersheds. The whole area is high, varying from 1,275 feet near Lakeside to almost 1,000 feet at St. Mary's and south of Embro.
2. THE LAND USE SURVEY: The purpose of a land use survey is to examine the present condition of an area and make an inventory of its physical capabilities and limitations, as a basis for planning its future use. The various factors are recorded according to a "Land Use Capability Classification", and entered on maps by means of various symbols or colours. Soil type, slope, drainage, degree of erosion and present use, were all carefully recorded.

For the purpose of the survey, soils are grouped according to the materials from which they are formed. These groups are divided into "series", soils with a similar "profile", or cross-section of the various layers of material, are placed in the same "series". The desirable "limestone till" group of soils occupy 85.6% of the area, the less desirable groups occupy 6.7% and muck soils, bottom land, etc., occupy only 7.7%. Slopes of 2 feet in 100 feet or less occurred on 64% of the area. The rougher land was more concentrated on Trout Creek Watershed.

Erosion on the area was of two kinds—sheet erosion, and gully erosion—both caused by running water. Over 66% of the area had not been affected by erosion, 20% had lost 1/3 or less of the top soil. Moderate erosion found was just 12% and severe erosion less than 1%. Gully erosion had affected 125 acres or .02% of the whole area.

Present land use was classified as cropland, pasture, woodland and idle land. Cropland covers 70.3% of the entire area mostly on the limestone till soils. Pasture was 19.9% and woodland 9.4% of the area.

3. **RELATION OF EROSION TO OTHER PHYSICAL FACTORS:** The incidence of erosion is related to soil type, slope and present land use. The degree of slope has a direct effect on the amount and severity of erosion, steeper slopes being more severely eroded except where the land has already been protected by woodlots or grasses. The fact that 66% of the area is free of erosion might indicate that this is not a serious problem; but, as 65% of the area has slopes of less than 2% and most slopes above 2% show erosion, the need for control is apparent. Of 41,072 acres of cropland in the two watersheds, only 1,012 acres or 2.4% is land unsuited for cultivation. This land is classified in Class VI, mainly on account of steepness and erosion, and should be retired from cultivation. Much of the permanent pasture is at present on the better classes of land, a smaller amount of class VI is pastured than is cultivated at present. Only 338 acres of class VI land is still wooded. The largest acreages are on Classes IV and V and 2,039 acres of woodland are on land suitable for cultivation. Nearly 40% of the pasture land showed some erosion but much of this had occurred when the land was under crop. Woodland was mostly free from erosion but some does occur. The pasturing of woodlots is probably the main cause of erosion in this type land.

4. **RESULTS OF THE SURVEY:** The system of land use capability classes was used in the survey. All land may be classified into one or more of the following eight classes:

Land Suitable for Cultivation:

- I. Land suitable for cultivation without special practices.
- II. Land suitable for cultivation with one or more simple practices.
- III. Land suitable for cultivation with intensive practices.

Land suitable for Occasional or Limited Cultivation:

- IV. Land suitable for occasional cultivation with limited use and intensive practices. Its chief use is for long term hay or pasture with cultivation limited to reseeding.

Land Not Suitable for Cultivation but Suitable for Pasture or Woodland:

- V. Land suitable for pasture or woodland with no special restrictions.
- VI. Land suitable for pasture or woodland with moderate restrictions.
- VII. Land suitable for pasture or woodland with severe restrictions.

Land Not Suitable for Productive Vegetation:

- VII. Marshes and other areas incapable of producing vegetation of economic importance other than for wildlife.

5. **THE USE AND SIGNIFICANCE OF THE SURVEY:** Among the chief uses of a survey of this kind are control of erosion, selection of uses and practices, and planning for conservation farming which embodies all these practices and applies them to the individual farm. Erosion may be controlled by maintaining organic matter, by crop rotations and by conservation methods of cultivation. The role played by soil organic matter in the control of run-off has been studied in the United States and experiments have shown that applications of organic matter reduce erosion by large amounts. Similar experiments with crop rotations have proved that the use of suitable cycles of crops may reduce water and soil losses, often to a spectacular degree.

Conservation practices include contour cultivation, strip-cropping and terracing to retain soil, and grassed waterways and diversion ditches to allow water to run off harmlessly. By a careful selection of these practices, based on the land use classification, the individual farm can be worked so as to give the most satisfactory returns while maintaining the fertility of the soil and reducing erosion to a minimum. To do this, a farm plan prepared by an expert is necessary in most cases. The application of these methods to a particular farm is discussed and illustrated by diagrams of the different stages of planning.

SECTION 2—FORESTRY

6. **SURVEYS AND STUDIES:** To get as accurate a picture as possible of woodland conditions in the Thames region a detailed survey was made of the Trout Creek and North Branch watersheds. Every farm woodlot and forest plantation was examined and all stream source areas and potential reforestation land was visited by a forester and a soil specialist. All woodlots were grouped in accordance with a specified classification and reported on as regards grazing, fencing, fire damage, thinning, etc.
7. **PRESENT WOODLAND CONDITIONS:** Existing woodlots include 9.3% of the land area of the Trout Creek watershed and 8.6% of that of North Branch Creek watershed. This is made up chiefly of hardwoods on both watersheds with some mixed woods and 8% of soft woods on Trout Creek. Only a small part of these are mature, the greater part being on the Trout Creek watershed. Damage by grazing is serious and should be checked. The pernicious practice of selling woodlots by the acre is still going on. In many cases, the exclusion of cattle alone would permit natural reforestation. Danger from fire is not great as most of the woodland is composed of hardwood.
8. **DISEASE:** No intensive study was made of tree disease in the area. The two obvious ones noted were chestnut blight and poplar canker. No white pine blister rust was observed even in plantations. Many complaints were received of the prevalence of common European buckthorn, which harbours black rust of oats and is invading the pastures. Chestnut trees which were once very plentiful in some localities, have been almost destroyed by chestnut blight. A few trees were reported to be still bearing, but no healthy trees were noted. Poplar canker was only noted on *Populus tremuloides* and was present in most of the stands. It can be checked to some extent by thinning and by removing all diseased trees.
9. **CONSERVATION MEASURES REQUIRED:** Reforestation is required in rundown woodlots, on areas of rough topography and light soil, on muck and bottom lands adjoining swamps, and around source areas. These last areas present special problems.

It was considered that 6,298 acres of plantable land exist on Trout Creek and 2,013 acres on North Branch Creek. Source areas consist of swamps, springs and tiled areas. Exclusion of cattle from swamps would do much to restore forest cover to these areas. Slopes around springs should be reforested. Tiled areas will be left as they are. Hawthorn areas may be dealt with by

killing and removing the trees or by planting more desirable trees among them, when the bushes are small. Softwoods are recommended for this purpose. There are 658 acres of hawthorns in the two watersheds.

SECTION 3—HYDRAULICS

10. THE PROBLEM AND ITS SOLUTION: Control of water has a long history, but emphasis has been more on irrigation, drainage and waterpower than on flood control. In the past the common idea of flood control was the construction of large dams above the threatened localities. Conservation measures aim to check run-off at the source by a number of small dams, and to control floods and regulate summer flow by somewhat larger dams further down the river. These larger dams may be used also to create recreational lakes.

Flood studies on the Thames are hampered by the fact that records of flow have only been kept since 1913. These records make plain the great variation in flow and the natural tendency of the river to flood.

The worst flood on the Thames occurred in 1937, but several bad floods took place before that time. Studies of the magnitude and probability of future floods were made and a probability curve drawn. Eight possible reservoirs could be built over a period of years giving a capacity of 100,000 acre feet which would take care of any future possible floods. Only the Fanshawe site was studied in detail and plans and costs are given for this. Some of the eight reservoirs would be dry dams used only for flood control. Others might be used to control summer flow and provide recreation facilities, by retaining part of their water through most of the year.

SECTION 4—FISH

11. INVESTIGATIONS OF TROUT CREEK AND ADJACENT AREAS: Intensive study was limited to Trout Creek. Other parts of the river were also visited and studied more or less thoroughly. Streams were visited at their sources and at short intervals along their courses, and collections of organisms were made and pertinent data recorded. Over a hundred species or groups were identified. The distribution of these species give an indication of conditions in this stream throughout the year, particularly the suitability of the section of the stream for trout spawning. Thirty-three species of fish were taken in the various streams. Speckled Trout were found in the small, cold streams and Rock Bass and Small-Mouthed Black Bass in the lower sections of Trout Creek.

Trout Creek has a length about twenty-five miles and a fall of nearly two hundred feet. It has several tributaries, most of which run through open country and consequently have high water temperatures. Four tributaries which rise near Harrington West are suitable for trout in their present condition. Others could be improved by the planting of trees.

Trout Creek seems to offer the most likely trout waters of all the tributaries of the North Thames, the others having the characteristics of warm streams. It has at present a number of deficiencies, which might be improved by proper measures. The main river might also be improved to increase bass fishing and the flood-control storage basins might contribute to this.

RECOMMENDATIONS

STATED OR IMPLIED IN THE THAMES REPORT

LAND

1. That erosion control be practised on all sloping land whether eroded or susceptible to erosion.
2. That drainage be practised on soils of the Perth, London, Brookston and Parkhill series, when used for field crops.
3. That pasture depreciated by hawthorns be cleared, improved and used according to its capability class.
4. That scientific experiments be conducted to establish and confirm the relation between soil, slope and erosion for Ontario conditions.
5. That improved crop rotations be encouraged to help maintain a higher level of organic content and fertility of the soil, as well as to increase capacity for soil for storing water.
6. That erosion control measures (contour cultivation, strip-cropping, terraces, diversion ditches and grassed waterways) be used on land indicated and that such practices be determined by Farm Planning Experts.
7. That demonstrations of conservation farming be carried out on the area as soon as possible.
8. That pasture or woodlots be maintained on land selected in this report and that cattle be excluded from woodlots in order that these measures may help in obtaining maximum soil and water conservation consistent with the optimum use of land.

WATER

9. That a flood control dam and permanent lake be built at Fanshawe approximately six miles north of London as the first unit in a flood control programme.
10. That flood control dams and permanent lakes be built at other sites specified in the report as a long-term programme.
11. That a further study be carried out by the Authority, to determine the location of check dams on small tributaries for the control of run-off at head-water streams.
12. That all encroachments upon the river channels and normal flood plains be prevented in order that the need for future costly corrective measures may be unnecessary.
13. That further underground-water studies be carried out, especially in the vicinity of the city of London.

FORESTS

14. That all lands designated for natural water storage areas be reforested where necessary; that natural regeneration be encouraged by scientific means wherever possible; that cattle be entirely excluded; and that cutting in both reforested and natural woods be regulated under supervision of the Authority.

15. That dams be built on ditches draining large swamps to retain water in spring and following heavy rainfall.
16. That studies be made to determine the best methods of establishing plantations, particularly of hardwoods, on good land and wet areas, to overcome loss from competition by weeds and damage by rodents.
17. That consideration be given to making a nominal charge for trees distributed for private reforestation purposes.
18. That counties, townships and other municipalities be persuaded to establish much larger forests within their boundaries, or in the case of towns and cities, in their vicinity.
19. That reforestation of privately-owned land be encouraged in every way and that an inspection service be established which will record the development of plantations set out on private land.
20. That where small areas on private land form natural water storage areas, either in the form of surface water in swamps or ponds, or underground water which later appears at the surface in the form of springs, these be reforested where there is no forest cover at present, and that all cutting thereon be regulated.
21. That the power given under the Trees Conservation Act, 1946 (Chapter 102) be extended to Conservation Authorities.
22. That woodlands of the whole Thames Watershed be classified according to cover types and present conditions as was done in the case of Trout and North Branch Creeks and recommendations made for their maintenance.
23. That an inventory be made of present and potential woodland in the whole watershed with the object of producing the maximum output of fuel-wood, fence-posts, poles and logs, with the view to providing enough timber to supply the local demand for these products and in the case of logs to supply as much as possible of the requirements of furniture factories located in the watershed.
24. That all Class V, VI and VII land (muck land, land too steep for cultivation and severely eroded land) in the whole watershed, be examined, decisions made as to whether it should be reforested or not, and where reforestation is advisable, plans be prepared and the work carried out.
25. That a programme be drawn up and action be taken as soon as possible to combat the invasion of land by hawthorn and wild apple.
26. That consideration be given to the setting up of a forest pathology division by the Ontario Government which will have power to act immediately in the case of epidemic tree diseases and which will make recommendations for the optimum utilization of disease-killed timber.

WILDLIFE

27. That a scientific census of the deer in the watershed be made each year, and in open seasons an exact census of the kill be compulsory on the part of hunters.
28. That until the Provincial pheasant research programme is completed, pheasants should be raised and distributed earlier in the season than is the present practice.

29. That returns showing the kill of pheasants in regulated areas be required from all those to whom the special licenses are issued.
30. That four hawks, the Red-tailed, Red-shouldered, Broad-winged and the Rough-legged Hawk, as well as the Snowy Owl, be placed immediately on the list of protected birds.
31. That the two chief heronries in the watershed be protected by the acquisition of the two woodlots in which they are located.
32. That small dams be placed at each end of the Ellice Huckleberry Marsh to make the marsh useful for wild ducks, muskrats, and other wildlife, as well as to improve the ground water level in the watershed.
33. That owners of ponds be encouraged to improve them for ducks, fish and other wildlife by the introduction of shore cover and aquatic food and cover plants.
34. That the reforestation programmes be adjusted so that in every five acres of reforested land a small area, at least an eighth of an acre, be devoted to game food and cover plots.
35. That a pamphlet be prepared which would discuss the possible improvements in farm environment for wildlife in Southern Ontario, including improvements to streams, ponds, woodlands, and wildlife food and cover plot mixtures, and that this pamphlet be given the widest possible circulation, particularly in schools.
36. That further studies be made on the possible improvements to the environment of Muskrats in the watersheds.
37. That the population cycles on the Meadow Mouse and possible control measures be further examined, before a large scale reforestation scheme is begun in the watershed.
38. That six additional small game preserves be established in the watershed for the public.
39. That consideration should be given to the acquisition for the public of the area known as the Huntingford Woods in Oxford County as a permanent game preserve and wildlife sanctuary in which complete control of the available cover would be exercised by the Authority. This area would provide an opportunity for demonstrations of stream conservation, woodlot management and wildlife improvement practices.
40. That the introduction of fish be restricted to those areas which have been shown by the biological analysis of 1946 to be satisfactory waters for the particular species to be introduced.
41. That those branches of the Thames River not yet examined be surveyed by a biologist with a view to their suitability for Speckled Trout, Brown Trout, Small and Large-mouthed Black Bass and Calico Bass, in order to avoid unsuccessful plantings.
42. That certain parts of the North Branch of the Thames River within the proposed Thames Valley Park be improved by small dams and deflectors and by planting trees along the banks to make them more suitable for Small-mouthed Black Bass.

43. That all owners of streams be encouraged to provide improved bank cover along their streams, and to place small dams and deflectors in suitable areas.
44. That a demonstration of the possibilities of improving a stream for Speckled Trout be made on Tributary "C" of Trout Creek, at Concession VII, Lot 34, Zorra West Township.
45. That Large-mouthed Black Bass and Calico Bass be introduced at the proper time in and above the proposed permanent lake at the Fanshawe dam site.

RECREATION

46. That three thousand acres of land, including the proposed Fanshawe Dam Site and the banks of the North Branch of the Thames River, north to No. 7 Highway, be acquired and administered by the Authority, as a multiple recreation area.
47. That the following facilities be provided in the proposed Thames Valley Park:
 - Boating and fishing on a permanent lake;
 - Aquatic sports facilities;
 - Wading beaches for children;
 - Scenic drives;
 - Picnic sites;
 - Group and individual camping sites;
 - Nature trails;
 - An arboretum;
 - Ski trails;
 - Demonstration of reforestation, well-managed woodlots and erosion control;
 - A series of small dams for the improvement of stream fish.
48. That the Canadian Youth Hostels Association establish one or more Youth Hostels close to the proposed park.
49. That suitable picnic sites and overnight camp sites on the watershed be acquired and improved.
50. That some of the better swimming holes be improved by the installation of diving boards and an indication of the depth of water.
51. That wayside picnic tables be placed at suitable places on the highways.

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